Florida Department of Environmental Protection

Office of Ecosystem Projects

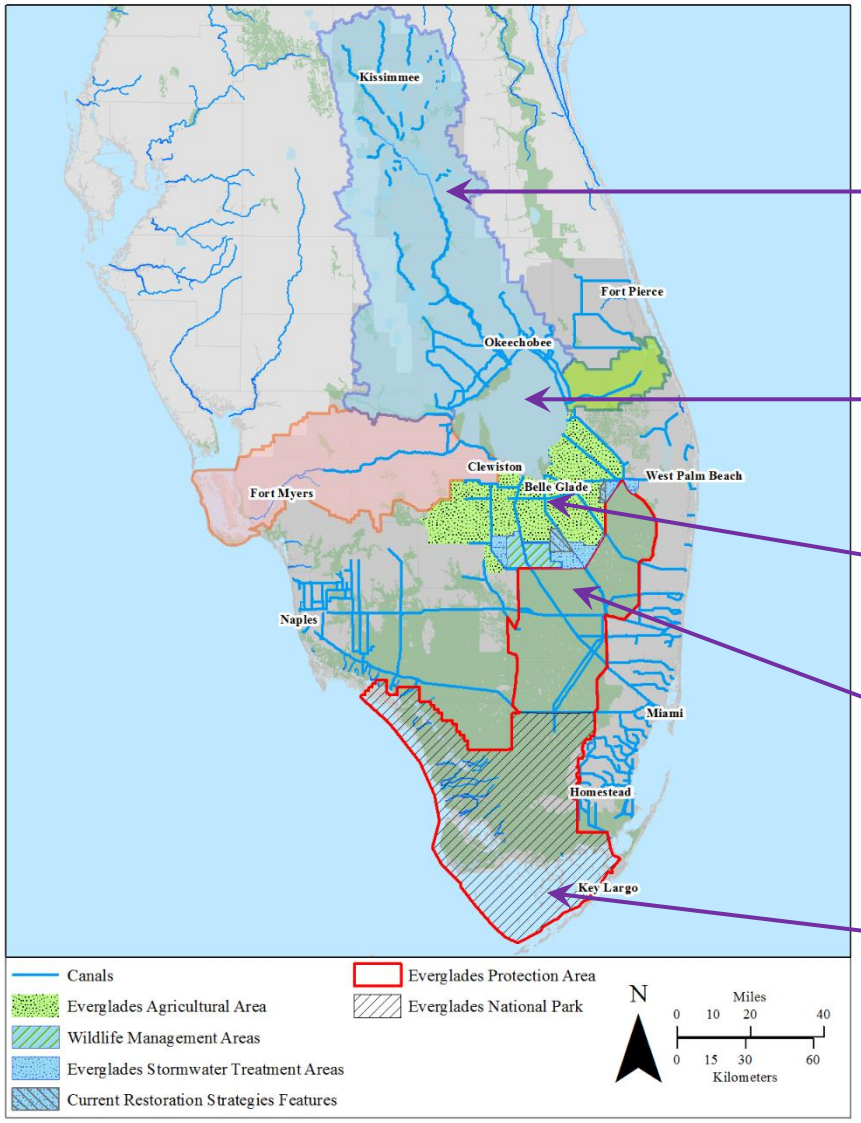
Nutrient Trends in the Kissimmee-Okeechobee-Everglades Ecosystem

August 6, 2015



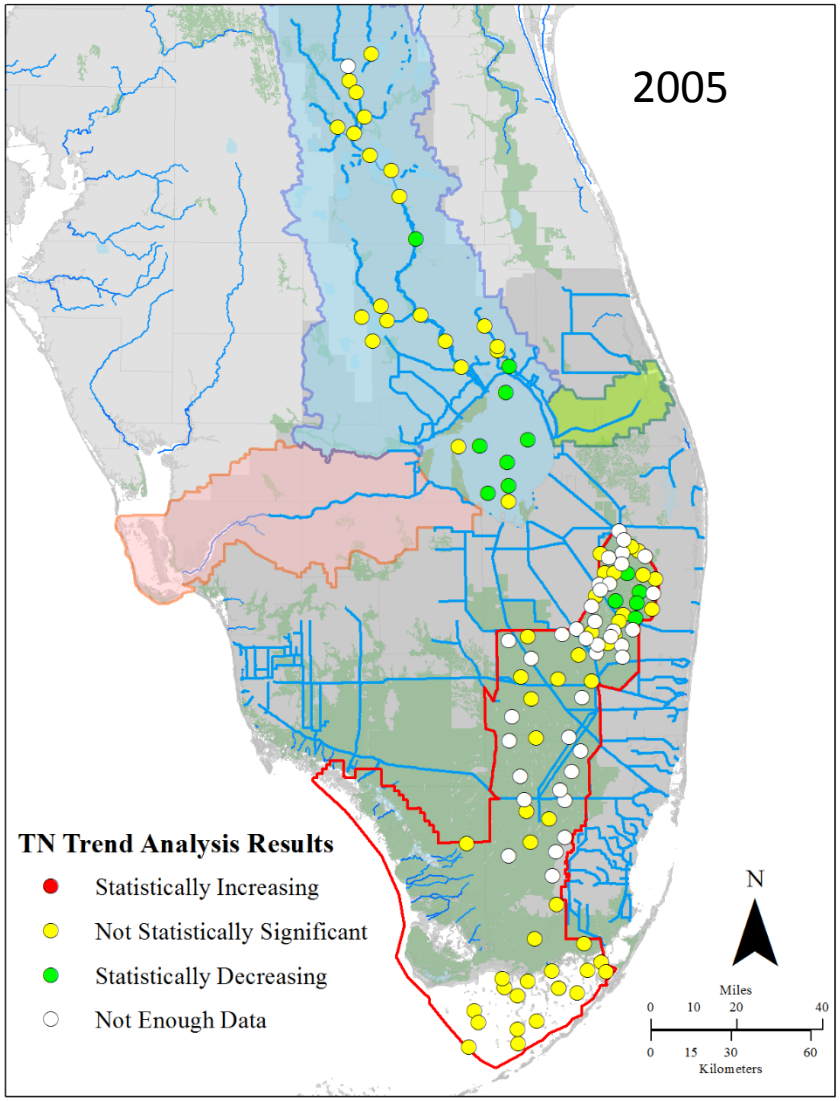


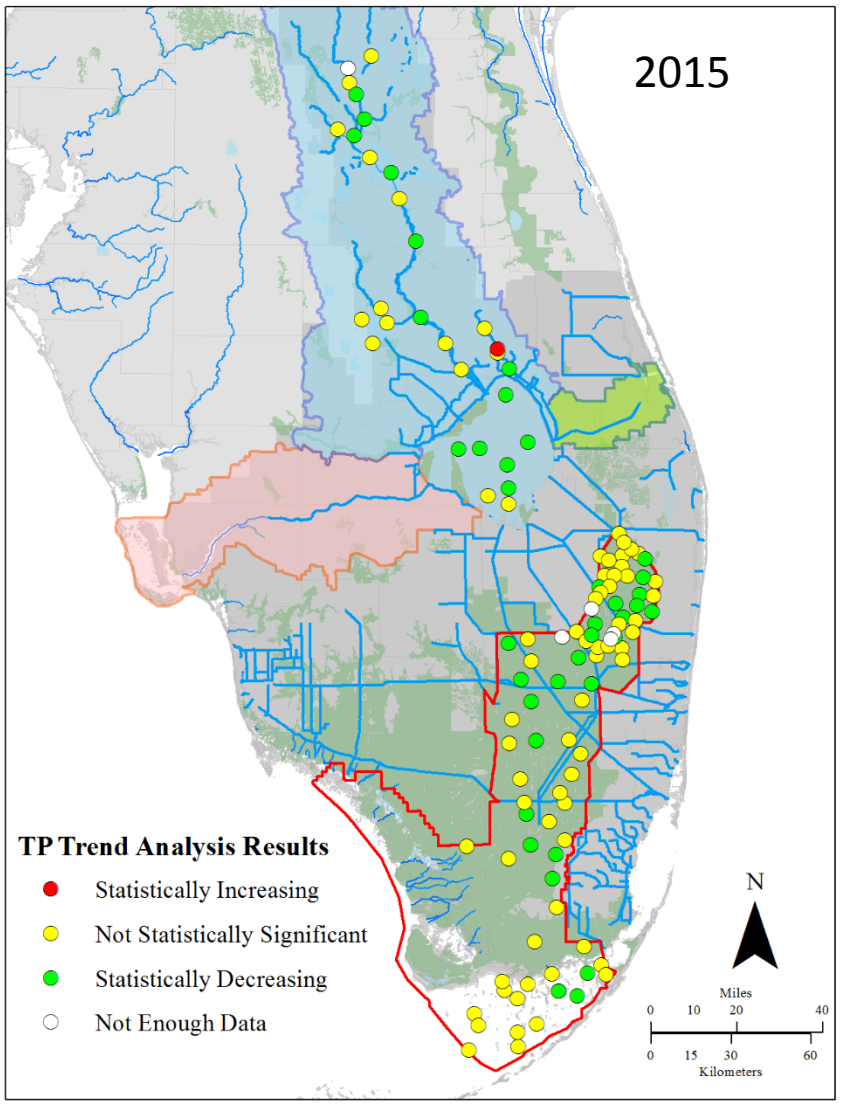
Kissimmee-Okeechobee-Everglades Ecosystem



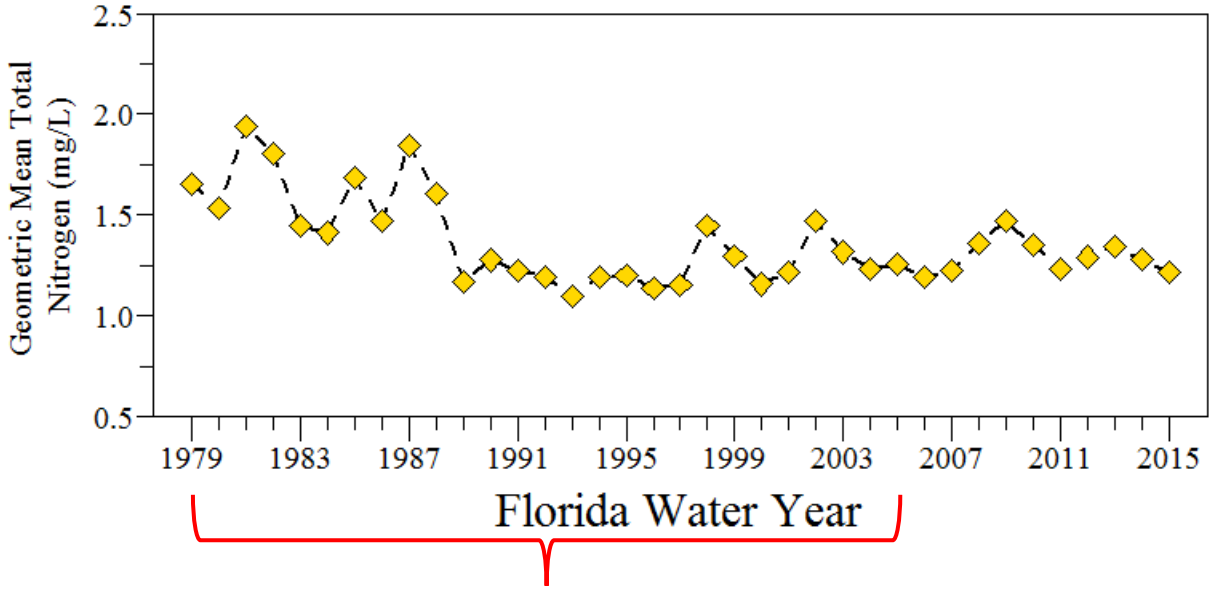
Region	Nutrient of Concern
Kissimmee Chain of Lakes	TP and TN
Lake Okeechobee	TP and TN
Everglades Agricultural Area	TP
Everglades Protection Area	TP
Florida Bay	TN

Total Nitrogen & Total Phosphorous Trends (2005-2015)





Northern Everglades Total Nitrogen Trends

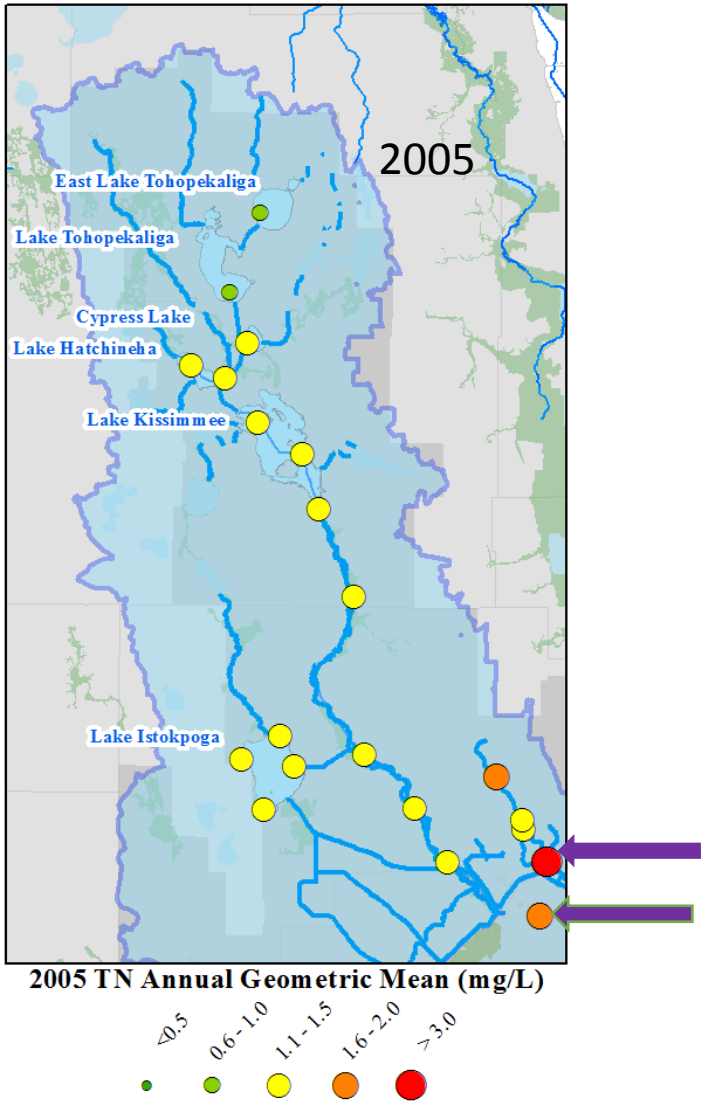


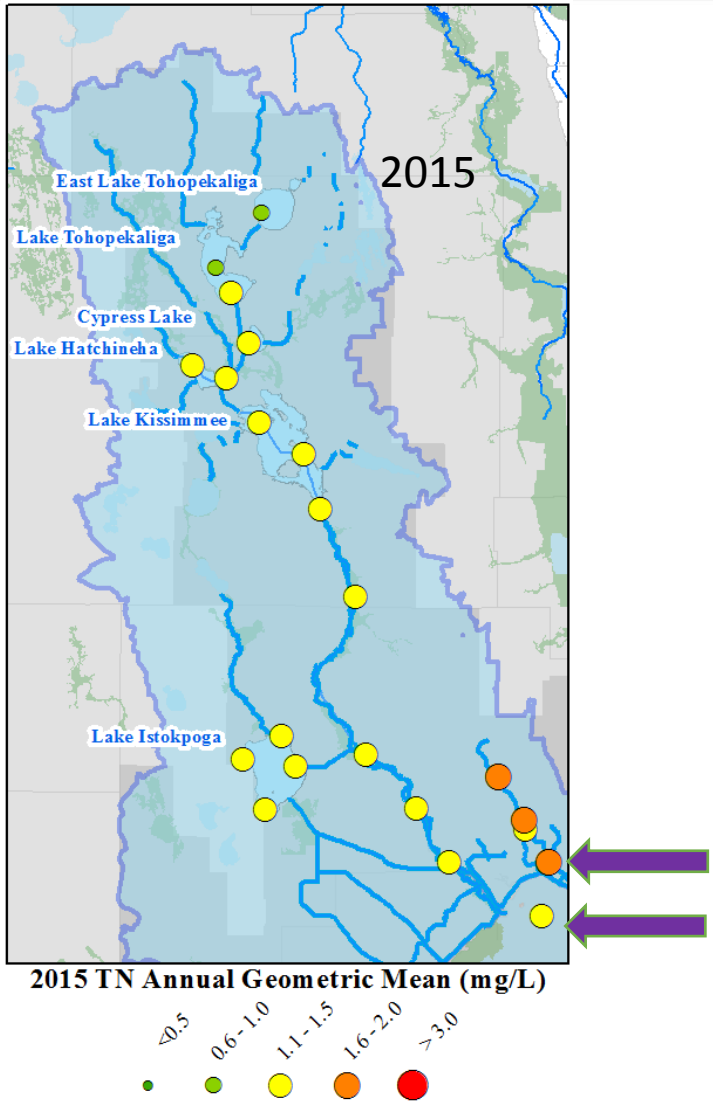
Limited data available

- Overall TN concentrations have qualitatively decreased throughout the period of record (WY1979 – 2015)[1].

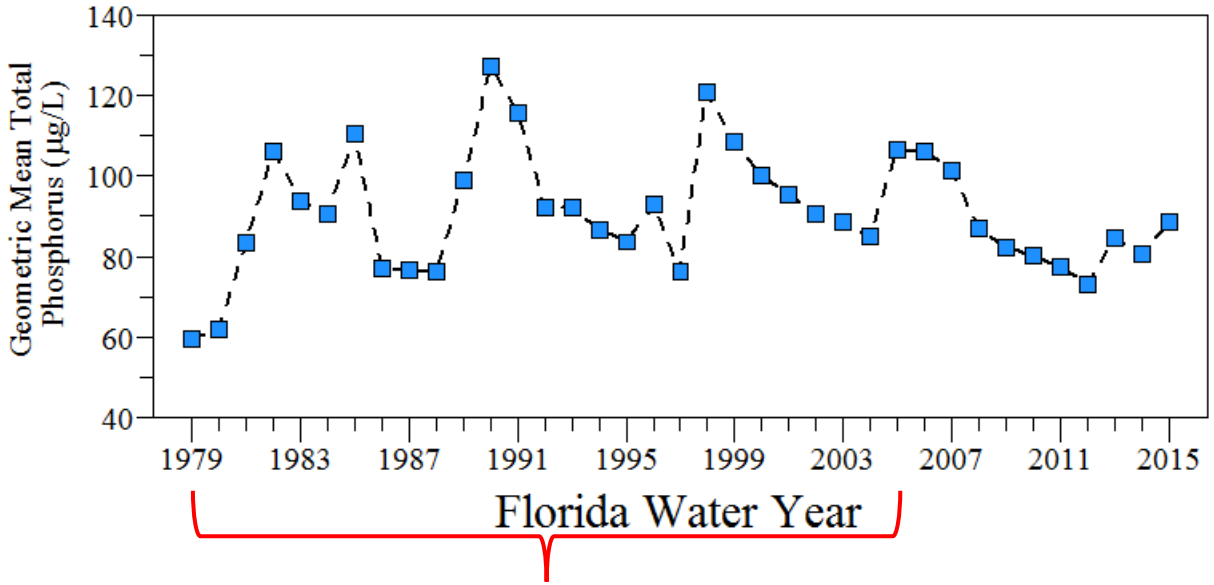
[1] Due to limited data availability no statistical analysis was performed on the entire POR.

Northern Everglades Total Nitrogen Trends





Northern Everglades Total Phosphorous Trends

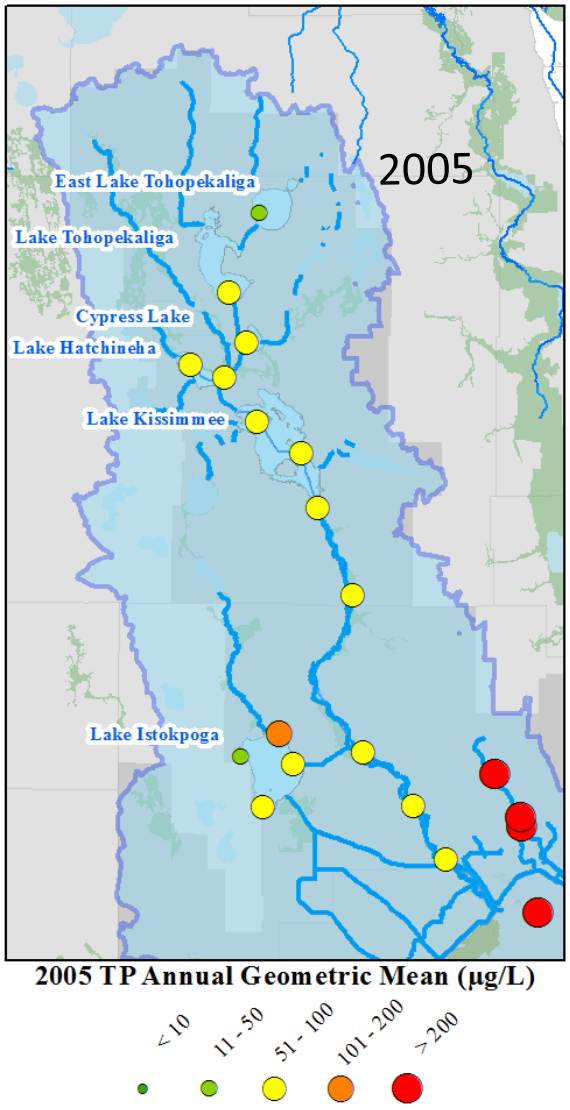


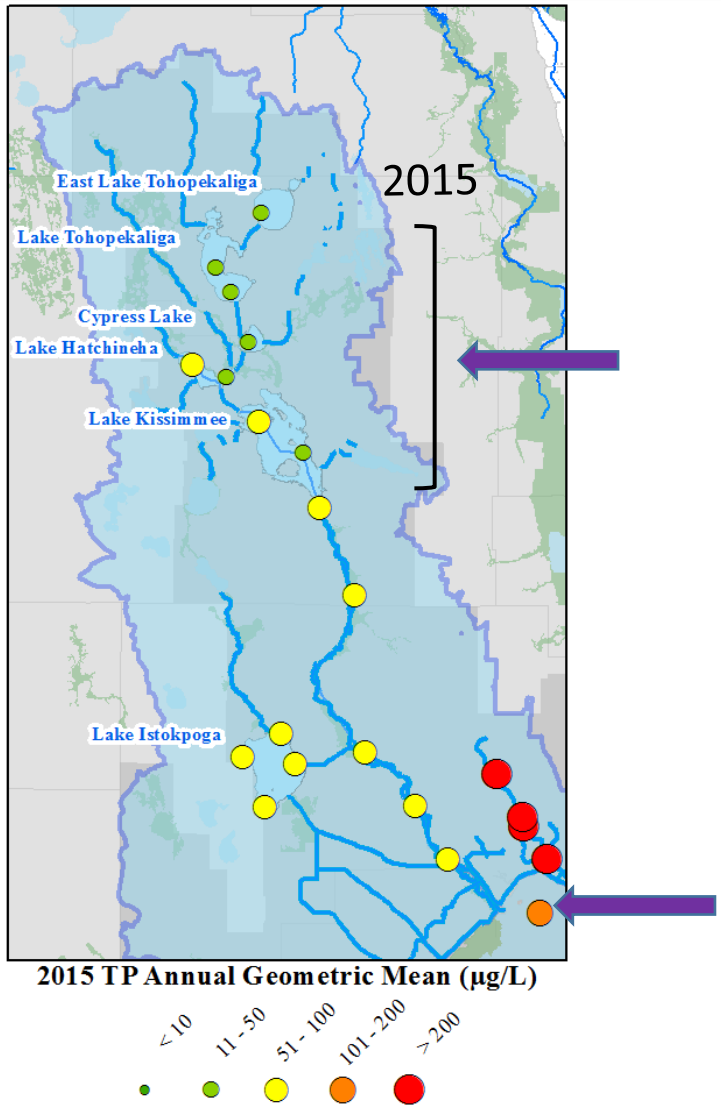
Limited data available

- Overall TP has fluctuated throughout the period of record (WY1979 – 2015).
- In recent years a steady qualitative decline in TP concentration have been observed from WY1999 to recent[1].

[1] Due to limited data availability no statistical analysis was performed on the entire POR.

Northern Everglades Total Phosphorous Trends





Northern Everglades Nutrients Trends

- On-farm BMPs
- Lakeside Ranch STA
- Taylor Creek/Nubbin Slough STAs
- KRR restoration
- Hybrid Wetland Treatment Technology

Magnitude of Change Summary

Total Nitrogen

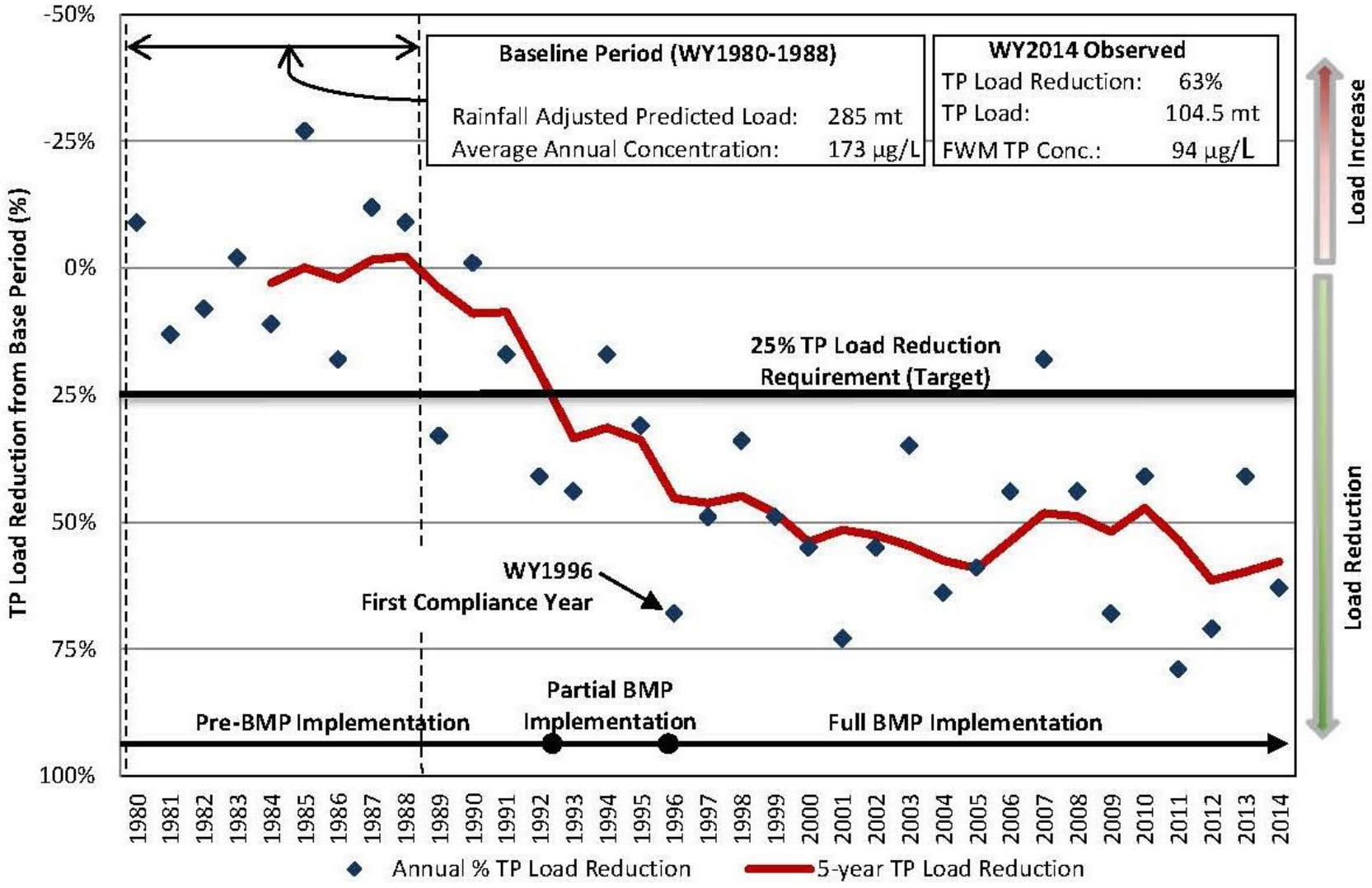
Statistics	Value (mg/L TN /Year)
Mean	-0.004
Minimum	-0.07
Maximum	0.06

Total Phosphorous

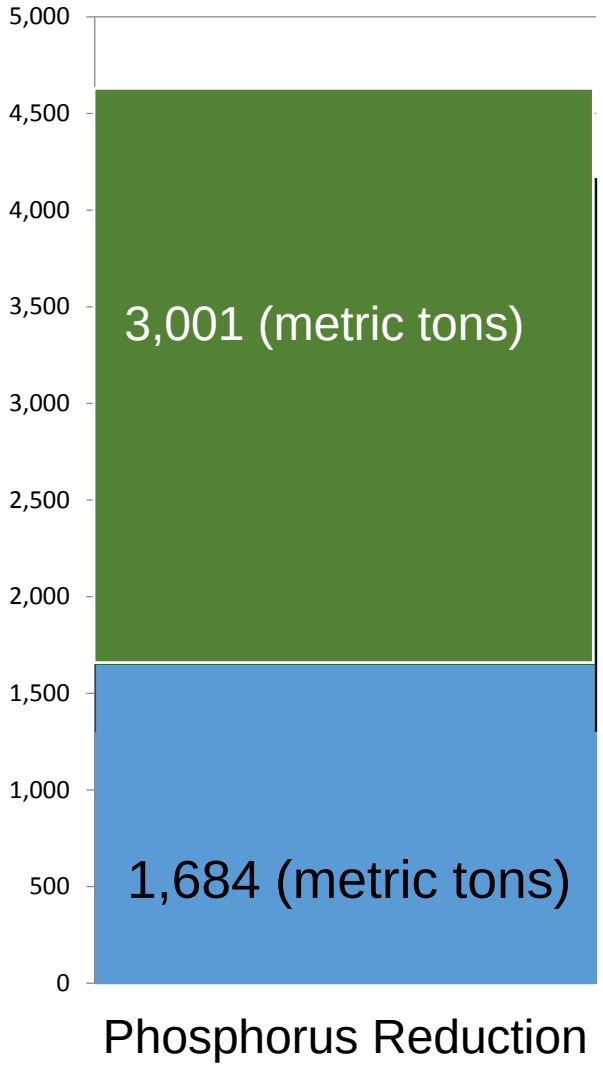
Statistics	Value (µg/L TP /Year)
Mean	-1.4
Minimum	-20.9
Maximum	25.1

Period of Record is 2005 to 2015

Everglades Agricultural Area



Everglades Agricultural Area

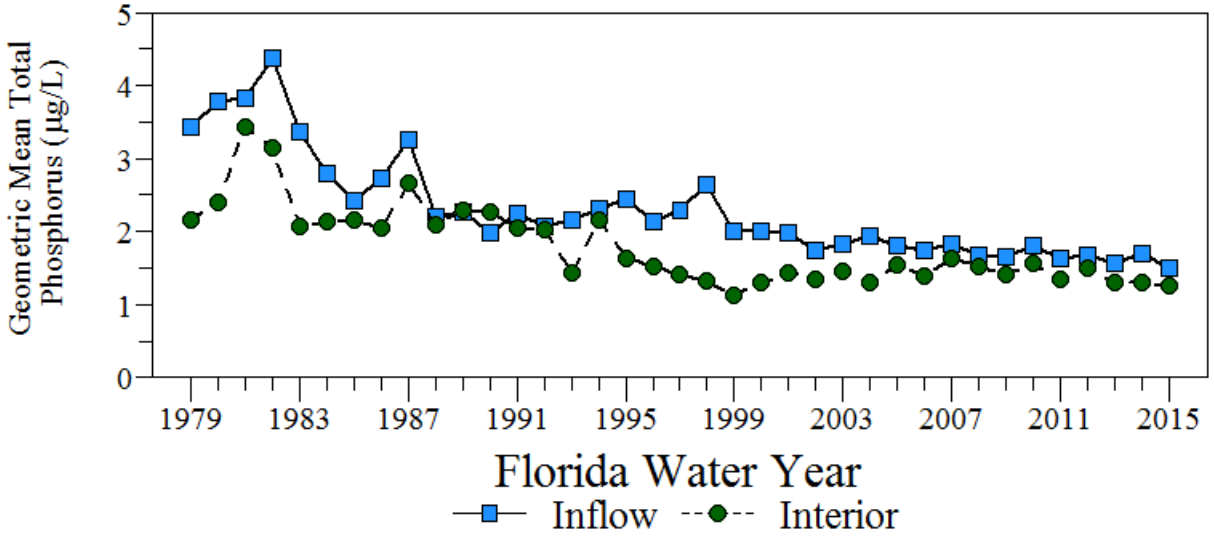


Phosphorus Removed from Everglades Protection Area Inflows Since the Everglades Forever Act in 1994

Amount removed by Agricultural Best Management Program, Paid for and Implemented 100% by Farmers

Amount Removed by Stormwater Treatment Areas jointly funded by Farmers and SFWMD

Everglades Protection Area Total Nitrogen Trends

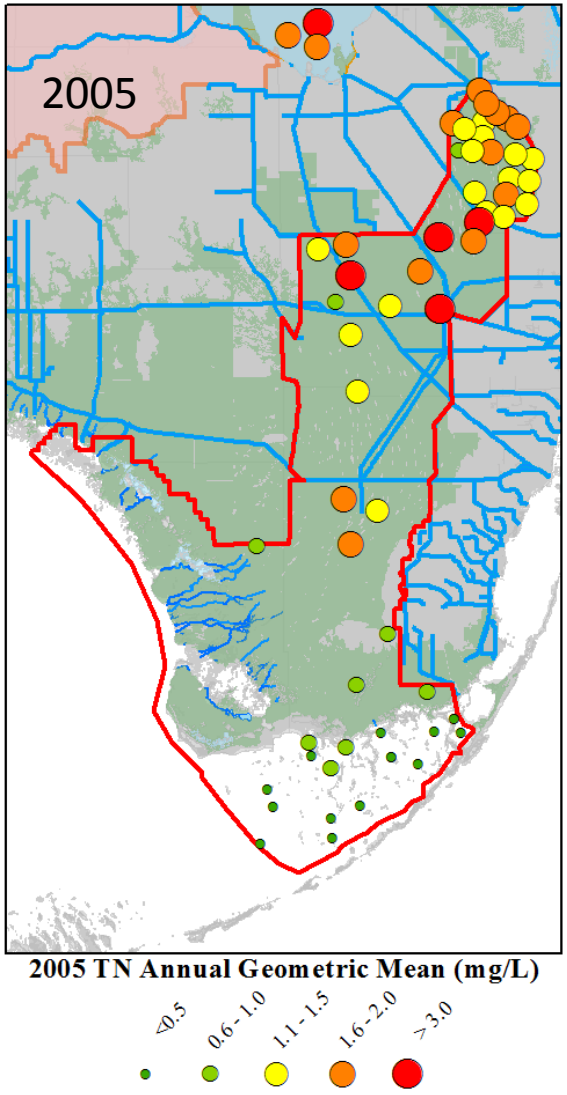


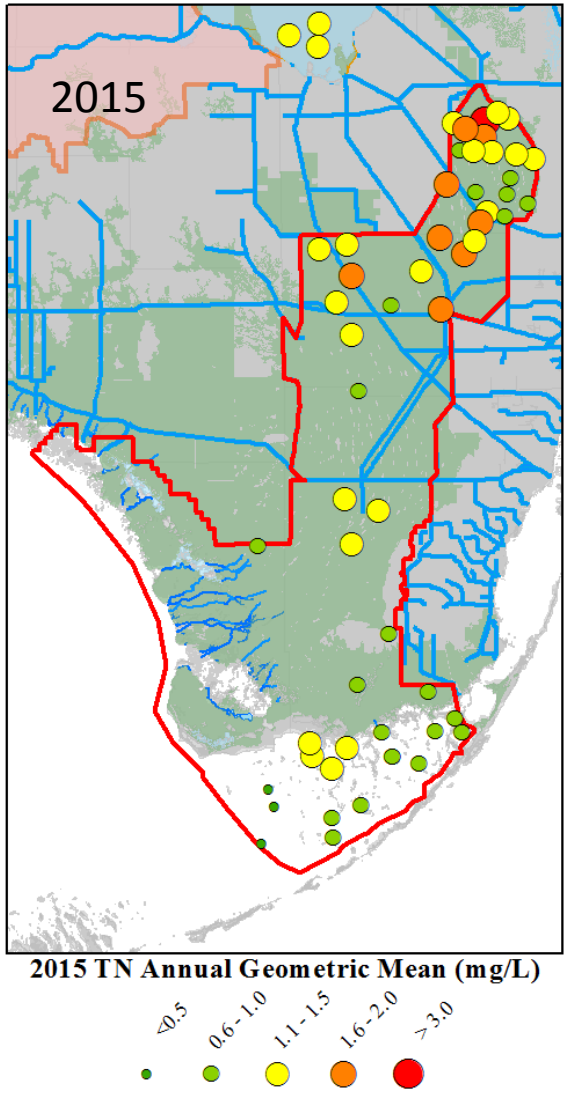
- Overall declining trend in regional TN geometric mean concentrations for both inflow and interior regions throughout the period of record (WY1979 – 2015).

- More detailed trend analysis can be found in the 2015 and 2016 South Florida Environmental Report (Ch 3A).

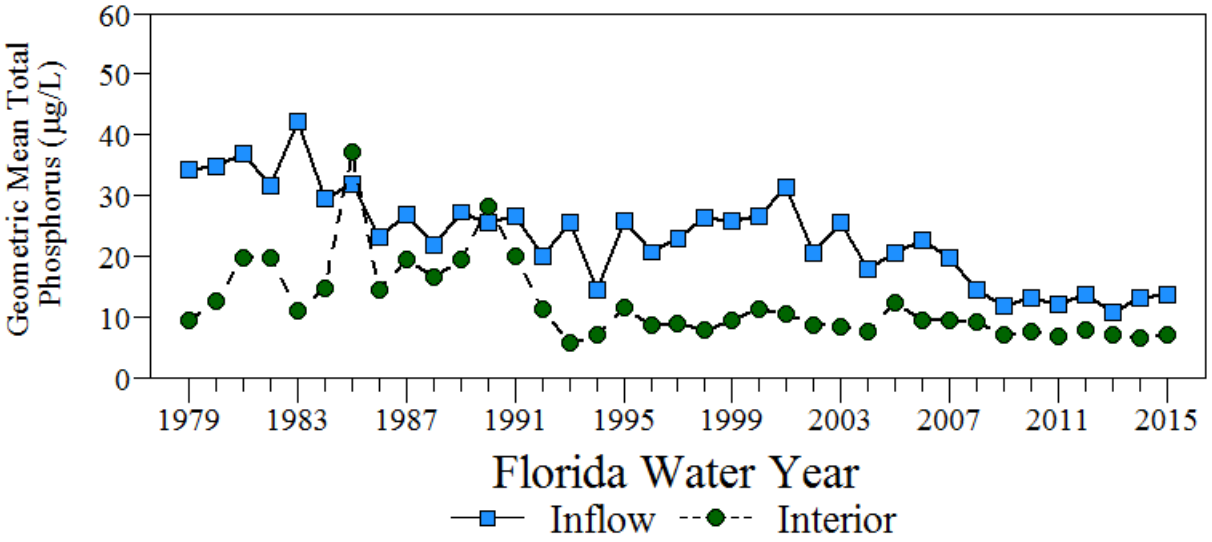
[1] Inflow and interior annual geometric mean concentrations are limited to WCA-1,2 and 3.

Everglades Protection Area Total Nitrogen Trends





Everglades Protection Area Total Phosphorous Trends

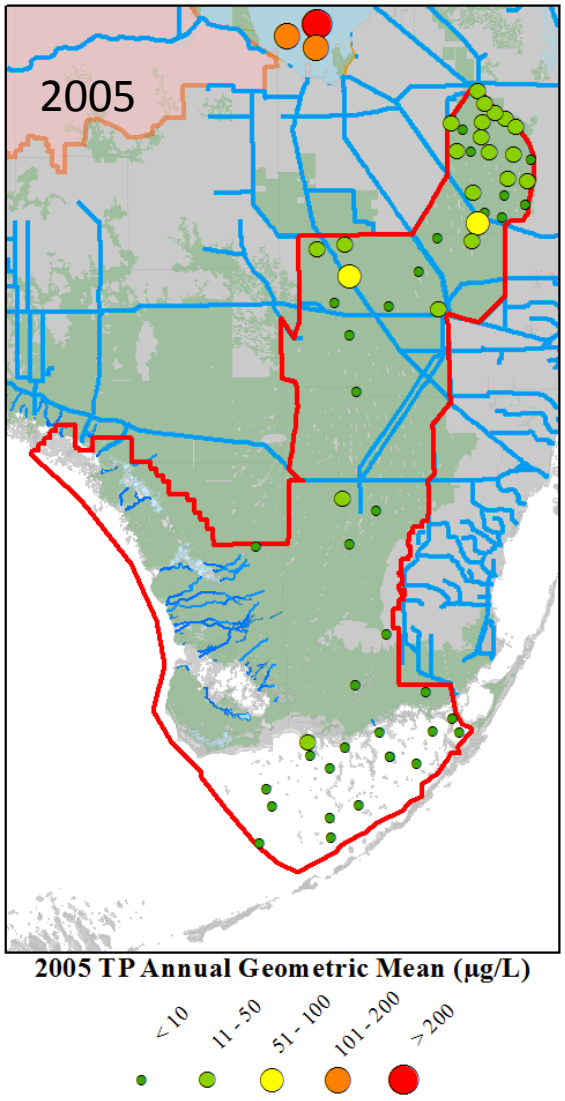


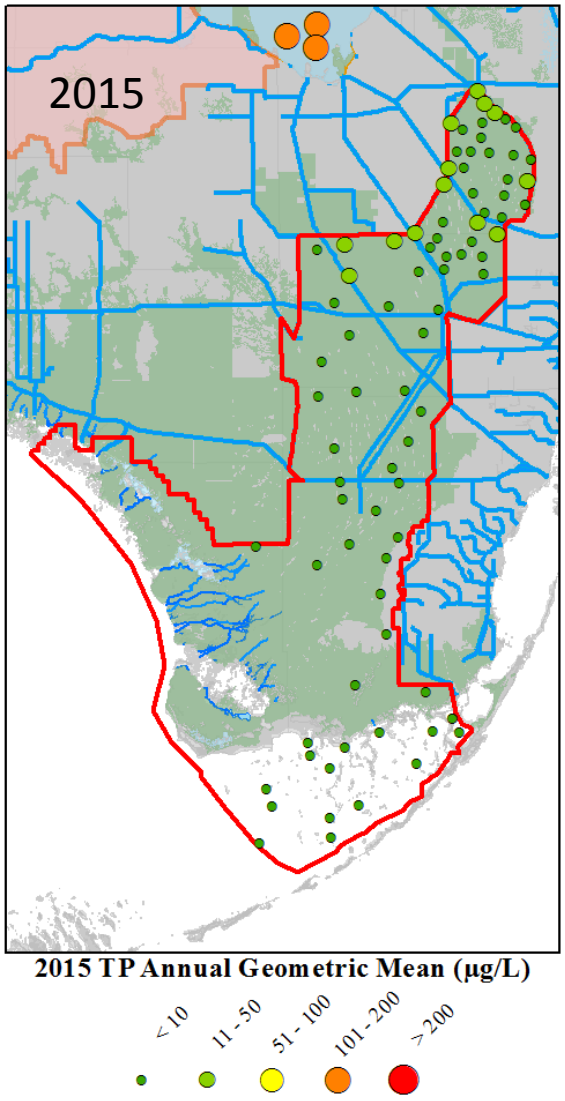
- Overall declining trend in regional TP geometric mean concentrations for both inflow and interior regions throughout the period of record (WY1979 – 2015).

- More detailed trend analysis can be found in the 2015 and 2016 South Florida Environmental Report (Ch 3A).

[1] Inflow and interior annual geometric mean concentrations are limited to WCA-1,2 and 3.

Everglades Protection Area Total Phosphorous Trends





Everglades Protection Area Nutrient Trends

Projects and BMPs

- On farm BMPs
- STAs
  - 2005: All STAs were operating

Magnitude of Change Summary

Total Nitrogen

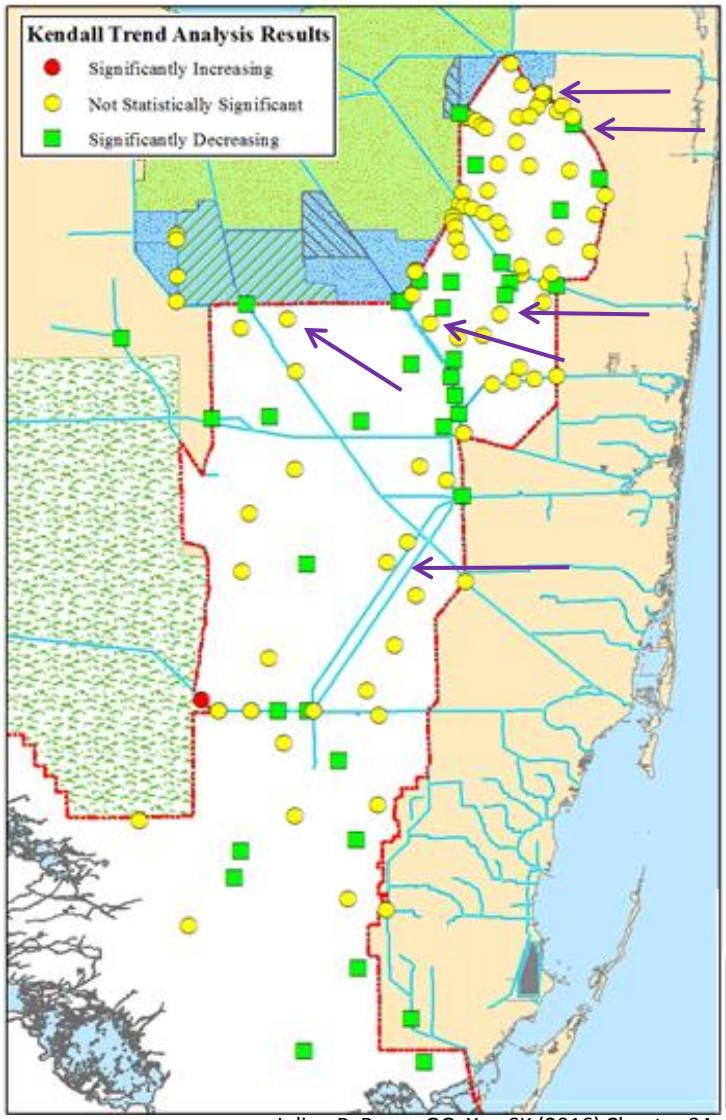
Statistics	Value (mg/L TN /Year)
Mean	-0.009
Minimum	-0.08
Maximum	0.05

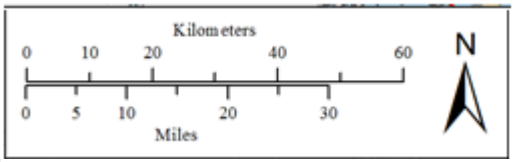
Total Phosphorous

Statistics	Value (µg/L TP /Year)
Mean	-0.26
Minimum	-2.72
Maximum	5.74

Period of Record is 2005 to 2015

Phosphorus Trends in the Everglades Protection Area

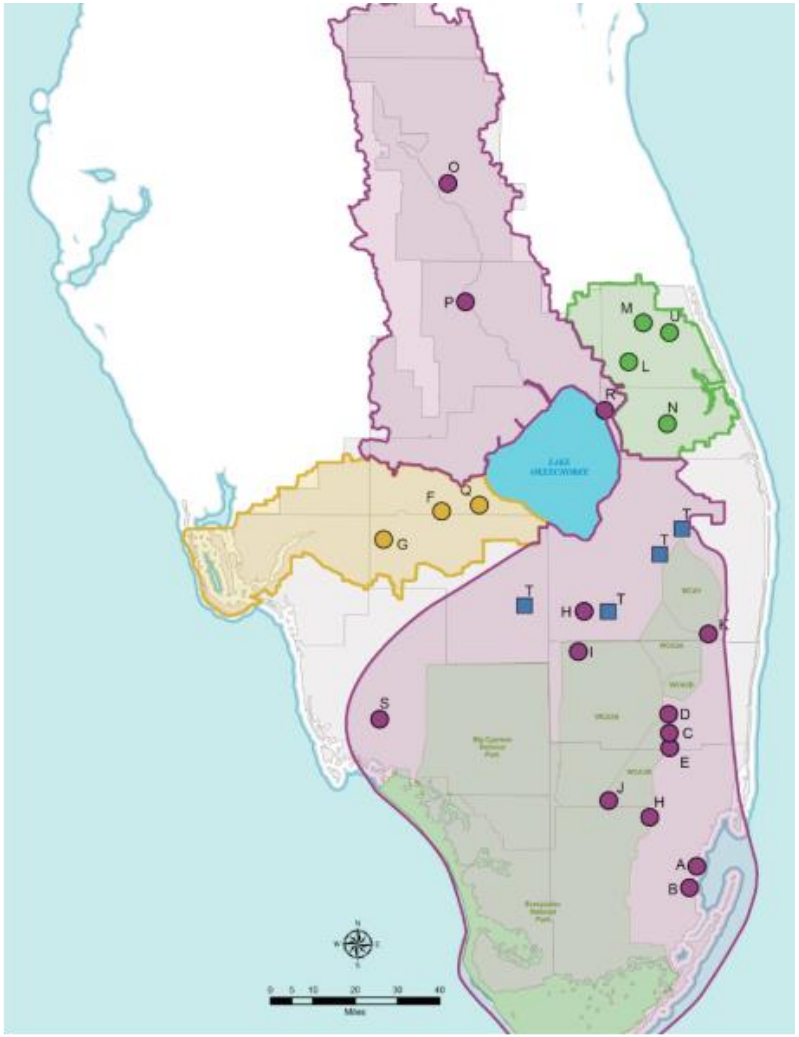




- Water quality improvement projects have reduced the total load of phosphorus entering the downstream ecosystem
- Technical analyses of water quality conditions in the Everglades Protection Area show downward trends in total phosphorus levels within the downstream ecosystem
- Analyses inform on-going interagency management and restoration efforts

Julian P, Payne GG, Xue SK (2016) Chapter 3A: Water Quality in the Everglades Protection Areas. 2016 South Florida Environmental Report

Future TP Reductions



Based on the Governor's Funding Plan

- Northern:
  TP – 26 MT/year
- Eastern:
  TP – 63 MT/year
- Western:
  TP – 9 MT/year
- Southern:
  TP – 86 MT/year

Questions?

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